

rarius lanceolatis, in apicem attenuatis, pagina adaxilia glabrata, rarissime puberula pilis minutis albidis, basis marginibus ciliatis, calycum tubis 9–13 mm longis, 15 venis, lobis aristatis 3–7 mm longis; corollis roseis saepius immaculatis, 21–30 mm longis, abrupte dilatatis; labia superiore 9–12 mm longa, incisa 1.0–1.5 mm, pubescendum pilis 1–2 mm longis; labia inferiore 12–17 mm longa, lobo mediano 4–6 mm longo; staminibus glabris, inter fauces 2–4 mm insertis; stylo glabro; chromosomis $n = 9$; oleis α -pineno, γ -terpineno, heptanone, nonanale, thymole et carvacrole satis inhaerentibus.

Type. Near Musquiz, Coahuila, Mexico, *R. W. Scora 2340* (MICH—holotype, UCR).

Specimens examined. Mexico. Coahuila: Musquiz, *Marsh 155* (F); Sierra del Carmen, Canon de Sentenela, *Wyend & Mueller 524* (MO).

Monarda citriodora var. *attenuata* (fig. 1) is distinguished from var. *citriodora* (fig. 1) mainly by its more horizontally spreading bracts subtending the glomerules, their nearly glabrous adaxialbract surfaces, green coloration and the more attenuate bract apices. The calyx lobes have few or no lateral hairs and the corolla dimensions are larger than those of var. *citriodora*. Variety *parva* (fig. 1.) differs from var. *attenuata* in having the bracts subtending the glomerules cupped and not horizontally spreading, in their pubescence, whitish coloration, abrupt acuminate bract apices, shorter calyx lobes and smaller overall dimensions of stem, foliage, calyx tubes and corollas. It differs from var. *citriodora* in the almost always glabrous upper corolla lip, and the reduced corolla size, calyx tube, calyx lobe, number of glomerules, leaf size and plant height. Living cultures which were grown for several generations in the greenhouses and growth chambers at the University of Michigan Botanical Gardens to find if these differences were genetically fixed or mere environmental variations showed, that all these differences remained although internode length increased in var. *parva* when grown under greenhouse conditions.

University of California, Riverside

LITERATURE CITED

- McCLINTOCK, E. and C. EPLING. 1942. A review of the genus *Monarda* (Labiatae). Univ. Calif. Publ. Bot. 20:147–194.
 SCORA, R. W. 1964. Interspecific relationships in the genus *Monarda* (Labiatae). Ph.D. dissertation (unpublished). Univ. of Michigan, Ann Arbor.

DOCUMENTED CHROMOSOME NUMBERS OF PLANTS

(See Madroño 9:257–258. 1949; 17:255. 1964)

Aesculus californica (Spach) Nutt. $n = 20$. California, Alameda Co., Univ. Calif. campus. *R. Lloyd 2633*, UC. Counted by R. Ornduff and R. Lloyd.

- A. sylvatica* Bartr. $n = 20$. North Carolina, Durham Co., Duke Forest. *R. Ornduff* 6377, DUKE. Counted by R. Ornduff and R. Lloyd.
- Alloctropa virgata* T. & G. ex Gray. $2n = 26_{11}$. California, Humboldt Co., near Hawkins Bar. *D. E. Anderson* 2447, UC.
- Alopecurus aequalis* Sobol. $2n = 7_{11}$. Utah, Summit Co. *D. E. Anderson* 2790, UC.
- Anthoxanthum odoratum* L. $2n = 20$. California, Humboldt Co., Arcata. *D. L. Gray* 64001, UC.
- Aristolochia californica* Torr. $2n = 16_{11}$. California, Yuba Co. *C. B. Wolf* 1741 (progeny), RSA. Counted by P. H. Raven. Gregory (Am. Jour. Bot. 43:111. 1956) reported $2n = 28$ in this species from material "from Rancho Santa Ana Botanic Garden" (Gregory, pers. comm.) and therefore this is possibly the same strain.
- Bidens pilosa* L. var. *radiata* Sch.-Bip. $n = 24$. Florida, Charlotte Co. *E. B. Smith* 530, KANU.
- Bocconia frutescens* L. $n = 20$. California, San Francisco Co., Strybing Arboretum, W. R. Ernst 709, DS. Cultivated; Alameda Co., Univ. Calif. W. R. Ernst 732, DS (progeny from Peru, Machu Picchu, *West* 6472, UC).
- Brodiaea appendiculata* Hoover. $n = 6$. California, Amador Co., Ione. *T. F. Niehaus* 515, UC.
- B. californica* var. *leptandra* (Greene) Hoover. $2 = 12$. California, Napa Co., Mt. St. Helena. *R. F. Hoover* 5904, UC. Counted by *T. F. Niehaus*. Cultivated UCBG 55.926.
- B. clementina* (Hoover) Munz. $2n = 16$. California, Los Angeles Co., San Clemente I. *T. F. Niehaus* 376, UC.
- B. coronaria* (Salisb.) Engler. $2n = 24$. California, Sacramento Co., near Ione. *T. F. Niehaus* 512, UC.
- B. coronaria* var. *macropoda* (Torr.) Hoover. $2n = 36$. California, Marin Co., Drakes Beach, *T. F. Niehaus* 535, UC.
- B. coronaria* var. *rosea* (Greene) Hoover. $2n = 12$. California, Lake Co., Indian Valley, *T. F. Niehaus* 556, UC.
- B. dudleyi* (Hoover) Munz. $n = 8$. California, Tulare Co., Summit Lake, *T. F. Niehaus* 611, UC.
- B. elegans* Hoover. $n = 8$. California, Nevada Co., Grass Valley. *T. F. Niehaus* 128, UC.
- B. filifolia* Wats. $2n = 32$. California, Los Angeles Co., San Clemente I. *T. F. Niehaus* 397, UC.
- B. gracilis* Wats. $n = 8$. California, Plumas Co., Spanish Peak, *T. F. Niehaus* 587, UC.
- B. hyacinthina* (Lindl.) Baker. $n = 28$. California, Nevada Co., Bear Valley. *T. F. Niehaus* 549, UC; $n = 35$. California, Yuba Co., near Marysville, *T. F. Niehaus* 220, UC.
- B. hyacinthina* var. *greenei* (Hoover) Munz. $2n = 16$. California, Butte Co., Table Mt., *T. F. Niehaus* 372, UC.
- B. jolonensis* Eastw. $2n = 12$. California, Monterey Co., Jolon. *T. F. Niehaus* 511, UC.
- B. lutea* var. *anilina* (Greene) Munz. $n = 20$. California, Sierra Co., Gold Lake. *T. F. Niehaus* 586, UC.
- B. pallida* Hoover. $n = 6$. California, Tuolumne Co., Chinese Camp. *T. F. Niehaus* & *W. Savage* 526. Counted by *T. F. Niehaus*.
- Carpentaria californica* Torr. $n = 10$. California, Santa Clara Co., Carnegie Institution. *W. R. Ernst* 733, DS. Cultivated.
- Cathcartia villosa* Hook. f. $n = 16$. California, Alameda Co., Univ. Calif. *W. R. Ernst* 731, DS. Cultivated.
- Chelidonium majus* L. $2n = 12$. Connecticut, New Haven. *K. Chambers* 1151, DS.

- Counted by W. R. Ernst. Mitosis in anther.
- Chrysopsis aspera* Shuttlew. $n = 18$. Alabama, Coosa Co. *E. B. Smith 475*, KANU.
- Chrysosplenium glechomifolium* Nutt. $2n = 9_{II}$. California, Humboldt Co., near Arcata. *D. E. Anderson 2975*, UC.
- Clematis crispa* L. $n = 8$. South Carolina, Berkeley Co., near Monck's Corner. *R. Ornduff 6412*, UC.
- Clethra lanata* Mart. & Gal. $2 = 8_{II}$. Mexico, Chiapas, Municipio of Tenejapa. *D. E. Breedlove 6947*, DS, F. Counted by D. W. Kyhos.
- Corydalis lutea* DC. $n = 28$. California. Santa Clara Co., Palo Alto. *W. R. Ernst 575*, DS. Cultivated.
- Dicentra chrysantha* (H. & A.) Walp. $n = 12$. California, San Benito Co., near Idria. *W. R. Ernst 521*, DS; Fresno Co., Los Gatos Creek road near San Benito Co. line. *W. R. Ernst 530*, DS. Some cells with an extra fragment.
- D. formosa* (Haw.) Walp. $n = 8$. California, Tuolumne Co., Crocker Ridge. *W. R. Ernst 764*, DS.
- D. nevadensis* Eastw. $n = 8$. California. Tulare Co., near Big Meadow Guard Station. *W. R. Ernst 570*, DS.
- D. ochroleuca* Engelm. $n = 16$. California, Los Angeles Co., Mulholland Drive. *P. H. Raven 14859*, DS. Counted by W. R. Ernst.
- D. spectabilis* (L.) Lem. $n = 8$. California, Santa Clara Co., Stanford Univ. *W. R. Ernst 488*, DS. Cultivated.
- Drymaria debilis* Brandege. $2n = 22_{II}$. Mexico, Baja California, Bahía de la Concepción. *I. L. Wiggins 19001*, DS. Counted by D. W. Kyhos.
- Erigeron quercifolius* Lam. $n = 9$. South Carolina, Berkeley Co., near Monck's Corner. *R. Ornduff 6415*, UC.
- E. inflatum* T. & F. var. *inflatum*. $n = 16$. Clark Co., near Las Vegas. *A. Cronquist 9919*, NY, UTC. Counted by J. L. Reveal.
- E. maculatum* Heller. $n = 20$. California, Mono Co., near Old Benton. *J. L. Reveal & J. L. Reveal 551*, UTC. Nevada, Clark Co., near Searchlight. *A. Cronquist 9974*, NY, UTC; Humboldt Co., Pine Forest Range, *A. H. Holmgren & J. L. Reveal 1325*, NY, UTC. Counted by J. L. Reveal.
- E. nudum* Dougl. ex Benth. var. *pubiflorum* Benth. $n = 20$. California, Modoc Co., Warner Range. *A. H. Holmgren & J. L. Reveal 1717*, NY, UTC. Counted by J. L. Reveal.
- E. ovalifolium* Nutt. var. *nivale* (Canby) Jones. $n = 20$. California, Mono Co., Sonora Pass. *J. L. Reveal & J. L. Reveal 492*, UTC. Nevada, Nye Co., Toquima Range, *J. L. Reveal 629*, NY, UTC. Counted by J. L. Reveal.
- E. ovalifolium* Nutt. var. *ochroleucum* (Small) Peck. $n = 20$. Nevada, Humboldt Co., Pine Forest Range. *A. H. Holmgren & J. L. Reveal 1263*, NY, UTC. Counted by J. L. Reveal.
- E. ovalifolium* Nutt. var. *orthocaulon* (Small) Hitchc. $n = 20$. Idaho, Butte Co., near Big Lost River. *A. H. Holmgren & J. L. Reveal 825*, NY, UTC. Nevada, Humboldt Co., Pine Forest Range. *A. H. Holmgren & J. L. Reveal 896*, NY, UTC. Counted by J. L. Reveal.
- E. pusillum* T. & G. $n = 16$. California, San Bernardino Co., near Needles. *A. Cronquist 9912*, NY, UTC. Counted by J. L. Reveal.
- E. reniforme* T. & F. $n = 16$. Arizona, Mohave Co., near Kingman. *A. Cronquist 9945*, NY, UTC. Counted by J. L. Reveal.
- E. sphaerocephalum* Dougl. ex Benth. var. *halimioides* (Gand.) Stokes. $n = 20$. Nevada, Humboldt Co., Pine Forest Range. *A. H. Holmgren & J. L. Reveal 1237*, NY, UTC. Counted by J. L. Reveal.
- E. trichopes* Torr. ssp. *minor* (Benth.) Stokes. $n = 16$. Nevada, Nye Co., Mercury. *A. Cronquist 9917*, NY, UTC. Counted by J. L. Reveal.
- Eriogonum umbellatum* Torr. ssp. *polyanthum* (Benth.) Stokes. $n = 40$. Nevada, Humboldt Co., Pine Forest Range. *A. H. Holmgren & J. L. Reveal 1225*, NY, UTC. Counted by J. L. Reveal.

- Eupatorium album* L. **n** = 10. South Carolina, Richland Co. *E. B. Smith* 504, KANU.
- Fritillaria atropurpurea* Nutt. **n** = 12. Utah, Cache Co., Green Canyon. *J. L. Reveal* & *P. J. Bottino* 711, UTC. Counted by *P. J. Bottino*.
- Helenium decurrens* (Macbr.) Moldenke. **n** = 20. South Carolina, Jasper Co. *E. B. Smith* 523, KANU.
- Helianthus angustifolius* L. **n** = 17. Louisiana, Vernon Parish. *E. B. Smith* 545, KANU.
- Heterotheca subaxillaris* (Lam.) Britt. & Rusby. **n** = 9. Florida, Okeechobee Co. *E. B. Smith* 531, KANU.
- Hierochloe occidentalis* Buckl. **2n** = 21_{II}. California, Humboldt Co., near Arcata. *D. E. Anderson* 2925, UC.
- Hilaria jamesii* (Torr.) Benth. **2n** = 18_{II}. Colorado, Mesa Co., Colorado National Monument. *D. E. Anderson* 7288, UC.
- Houstonia caerulea* L. **n** = 16. North Carolina, Durham Co., Duke University. *W. R. Anderson* s. n., UC. Counted by *R. Ornduff*.
- H. serpyllifolia* Michx. **n** = 8. South Carolina, Oconee Co., Camp Jocassee. *R. Ornduff* 6382, UC.
- Illicium floridanum* Ellis. **n** = 13. Louisiana, Washington Parish. *D. E. Stone* 1357, NO. **2n** = 26. Mississippi, Hancock Co. *D. E. Stone* 1522, DUKE.
- I. parviflorum* Michx. ex Vent. **n** = 14. Florida, Gainesville. *D. E. Stone* 1422, DUKE. Cultivated.
- Marshallia graminifolia* (Walt.) Small. **n** = 9. South Carolina, Georgetown Co. *E. B. Smith* 516, KANU.
- Meconopsis betonicifolia* Franch. **n** = 40. California, Mendocino Co., Fort Bragg. *W. R. Ernst* 738, DS. This is "var. *baileyi*" with pubescent fruits. Cultivated.
- M. cambrica* (L.) Vig. **n** = 28. California, Berkeley, Univ. Calif. *W. R. Ernst* 730, DS. Cultivated
- M. ? paniculata* (D. Don) Prain. **n** = 28. California, San Francisco Co., Strybing Arboretum. *W. R. Ernst* 734, DS. Corollas yellow. Cultivated.
- Melianthus major*. **2n** = 18_{II}. California, Humboldt Co., Arcata. *D. E. Anderson* 2917, UC. Cultivated.
- Orthocarpus castillejooides* Benth. var. *humboldtensis* Keck. **2n** = 12_{II}. California, Humboldt Co., salt marshes of Humboldt Bay. *D. E. Anderson* 2973, UC.
- Palafoxia integrifolia* T. & G. **n** = 10. Texas, Fayette Co. *E. B. Smith* 552, KANU.
- P. sphacelata* (Nutt.) Cory. **n** = 12. Texas, Bastrop Co. *E. B. Smith* 555, KANU.
- Papaver alpinum* L. **n** = 7. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 551, DS. Pubescent and glabrous plants studied. Cultivated.
- P. atlanticum* Ball. **n** = 7. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 553, DS. Some cells with a tetravelant figure. Cultivated.
- P. bracteatum* Lindl. **n** = 21. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 729B, DS. Most flowers subtended by a pair of large foliose bracts. Cultivated.
- P. nudicaule* L. **n** = 14. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 552, DS. Common Iceland Poppy of nursery trade. Cultivated.
- P. rhoeas* L. **n** = 7. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 599, DS. Common single and double forms of Shirley poppy. Cultivated.
- P. somniferum* L. **n** = 11. California, Santa Clara Co., Stanford Univ. *W. R. Ernst* 566A, DS. Common opium poppy, occasionally with a few hairs on peduncles and petioles. Cultivated; *W. R. Ernst* 566B, DS. Common multiple-petaled or double opium poppy. Cultivated.
- Plantago erecta* Morris. **2n** = 10_{II}. California, Ventura Co., Santa Monica Mts. *P. H. Raven* 14866, LA. **2n** = 20. California, Humboldt Co., near Samoa. *D. E. Breedlove* 3046 (progeny), DAV; Los Angeles Co., Santa Catalina I. *P. H. Raven* (progeny), RSA; Santa Catalina I., Middle Ranch, *P. H. Raven* 17841 (progeny), DAV; San Clemente I. *P. H. Raven* 17227 (progeny), DAV, RSA. (*P. erecta* ssp.

- rigidior* Pilger). $2n = 42$. California, Santa Barbara Co., near Lompoc, *P. H. Raven 15511* (progeny), DAV. No evident correlation was found between chromosome number and either morphology or pollen size in these collections, which appear to span the range of variation in this species. All collections studied were autogamous, in contrast to the allogamous but similar *P. insularis* Eastw. Counted by D. M. Moore.
- P. insularis* Eastw. $2n = 8$. California, San Bernardino Co., near Barstow. *D. M. Moore 422*, DAV.
- Pleuropogon refractus* (Gray) Benth. ex Vasey. $2n = 18_{II}$. California, Humboldt Co., near Arcata. *D. E. Anderson 2404b*, UC.
- Porophyllum tridentatum* Wats. var. *crassifolium* Johnston. $n = 15$. Mexico, Baja California, San Bruno. *A. Carter & J. Reese 4538*, UC, KANU. Counted by R. R. Johnson.
- Primula maguirei* Williams $n = 22$. Utah, Cache Co., Logan Canyon. *J. L. Reveal & P. J. Bottino 710*, UTC.
- Schisandra glabra* (Brickell) Rehder. $2n = 28$. Florida, Liberty Co., *D. Demaree*, April 6, 1964, DUKE. Counted by D. E. Stone.
- Sidalcea malachroides* (H. & A.) Gray. $2n = 10_{II}$. California, Humboldt Co., near Arcata. *D. E. Anderson 2502*, UC.
- Solanum brachystachys* Mart. & Gal. $2n = 12_{II}$. Mexico, Chiapas, Municipio of Chamula. *D. E. Breedlove 7060*, DS. Counted by D. W. Kyhos.
- Tolmiea menziesii* (Pursh) T. & G. $2n = 14_{II}$. California, Humboldt Co., near Arcata. *D. E. Anderson & B. D. Rogers 1564*, UC. Counted by B. D. Rogers.

REVIEWS

A Selected Guide to the Literature on the Flowering Plants of Mexico. By IDA KAPLAN LANGMAN. 1015 pp. University of Pennsylvania Press, Philadelphia, 1964. \$25.00.

The publication of this annotated bibliography culminates more than 20 years of dedicated labor. The breadth of Mrs. Langman's research on the literature of Mexican botany is indicated to some extent by the journals and the bibliographic titles cited in the preliminary materials and by the list of libraries which she consulted. In order to obtain references to local material that might not have found its way to the larger libraries, Mrs. Langman visited libraries in 27 states of Mexico, so that here we have an invaluable tool for all having an interest in any aspect of Mexican botany from the time of the Conquistadores to the present. The vicissitudes of publishing evidently made impossible the last minute inclusions of references to the most important taxonomic contribution to our knowledge of the flora of northwestern Mexico, I. L. Wiggins, *Flora of the Sonoran Desert* (Stanford University Press, 1964).

Of the 1015 pages, 792 are devoted to an alphabetical compilation of author citations. The user should refer to Mrs. Langman's remarks (p. 12) regarding the difficulties encountered in citing authors' names, especially the Latin American "trinomials."

The 156 pages of Index (four columns to a page) immeasurably increase the value of the Bibliography, for the author's labor has forestalled ours. Familiarity with its organization will enable knowledgeable researchers to by-pass several of the reference steps. Otherwise, a step-by-step search for information about *jacama* would lead the reader from *jacama* to the genera *Cacara*, *Dolichos*, and *Pachyrrhizus*, each of which in turn refers him to "Leguminosae." Under this family the genera are listed in alphabetical order. Under the genera are various subject headings, and, finally, the desired author references to the main part of the Bibliography, q.v. A typographically understandable but unfortunate structural difficulty in the Index is the minimal indentation of the first subheadings. This, coupled with the fact that the main heading (when a subject is carried from column to column) is